



# **SGMA Program Update**

## **Best Management Practices**

November 15, 2016



# DWR's Near Term SGMA Responsibilities/Due Dates



## **Initial Basin Prioritization: §10723.4**

- Completed by January 31, 2015



## **Regulations for Modifying Groundwater Basin Boundaries: §10722.2**

- Completed by January 1, 2016



## **Identification of Critically Overdrafted Basins: §12924**

- Completed January 2016, Updated October 2016



## **Groundwater Sustainability Plan and Alternatives Regulations: §10733.2**

- Completed May 18, 2016



## **Modifying Groundwater Basin Boundaries (Round 1)**

- Completed October 11, 2016

### **• Water Available for Replenishment: §10729(c)**

- Due December 31, 2016

### **• Best Management Practices: §10729(d)**

- Due January 1, 2017

### **• Bulletin 118: §12924**

- Interim Update due January 2017;
- Comprehensive Update due 2020

### **• Revised Basin Prioritization**

- Estimated mid 2017

### **• Alternatives Reviews**

- Begins January 1, 2017

### **• Groundwater Sustainability**

#### **Agency Formation: §10723**

- Due by June 30, 2017

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# Best Management Practices

# Legislation

## Water Code 10729

(d)(1) By January 1, 2017, the department shall publish on its Internet Web site best management practices for the sustainable management of groundwater

(2) The department shall develop the best management practices through a public process involving one public meeting conducted at a location in northern California, one public meeting conducted at a location in the San Joaquin Valley, one public meeting conducted at a location in southern California, and one public meeting of the California Water Commission.

# BMPs vs. GSP Regulations

- Role of BMPs to provide clarification, technical assistance, and examples to help GSAs develop elements of GSPs
- BMPs (technical assistance) vs. GSP Regulations (requirements)
- GSP Regulations
  - Sec. 352.2 (Monitoring Protocols)
  - Sec. 352.4 (Installation of Monitoring Sites)  
**(BMP #2 - Monitoring Networks and Identification of Data Gaps)**

## BMP Development Phase I

Develop highest  
ranked BMP  
topics

Topics not  
identified as  
highest rank  
developed at  
lower level of  
detail

## BMP Development Phase II

Remaining BMPs  
developed to a  
higher level of  
detail



# Types of Information

BMPs (Technical Assistance)  
and Guidance

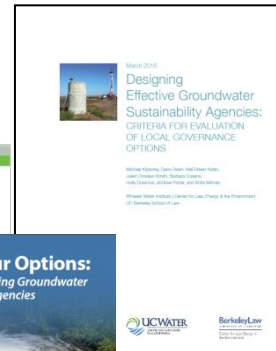
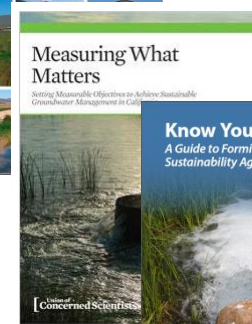
Case Studies



Info

Standards

References





# BMP Survey Responses



Department of Water Resources  
SGM Sustainable Groundwater Management

## Welcome to Best Management Practices Survey

Thank you for taking time to participate in this survey. Best Management Practices (BMPs) are intended to provide clarification, guidance, and examples to help GSAs develop the essential elements of a Groundwater Sustainability Plan (GSP). BMPs may be in the form of case studies of other groundwater management efforts, standards, or other DWR guidance or reference reports. Two types of BMPs are envisioned:

1. Certain BMPs that are identified in the Emergency Regulations for Groundwater Sustainability Plans and Alternatives (Emergency Regulations) provide standards that must be incorporated into GSPs.
2. BMPs that are not specifically identified in the Emergency Regulations may provide suggestions and guidance on how GSAs might develop certain GSP components.

While the use of BMPs is mentioned in the Sustainable Groundwater Management Act (Act), the Act itself does not provide direction on the scope or content of the BMPs. Your input in this survey will be considered by DWR in framing this scope and content. The Emergency Regulations, adopted in May 2016, identify certain GSP components that rely on BMPs, but the Emergency Regulations do not identify a comprehensive list of BMPs. The list of potential BMPs is therefore open-ended. BMPs can cover a wide range of subjects for which additional guidance would support the development of comprehensive GSPs. DWR will organize BMPs in relation to the Emergency Regulations. The purpose of this survey is to solicit input from the public that will help focus DWR's effort in developing BMPs to guide local agencies in the development and implementations of Groundwater Sustainability Plans. The results of this survey will be summarized, but individual responses are not planned to be published.

Upon survey completion, you will receive a confirmation email with your submitted inputs. Please read the BMP Framework Document before taking the survey.

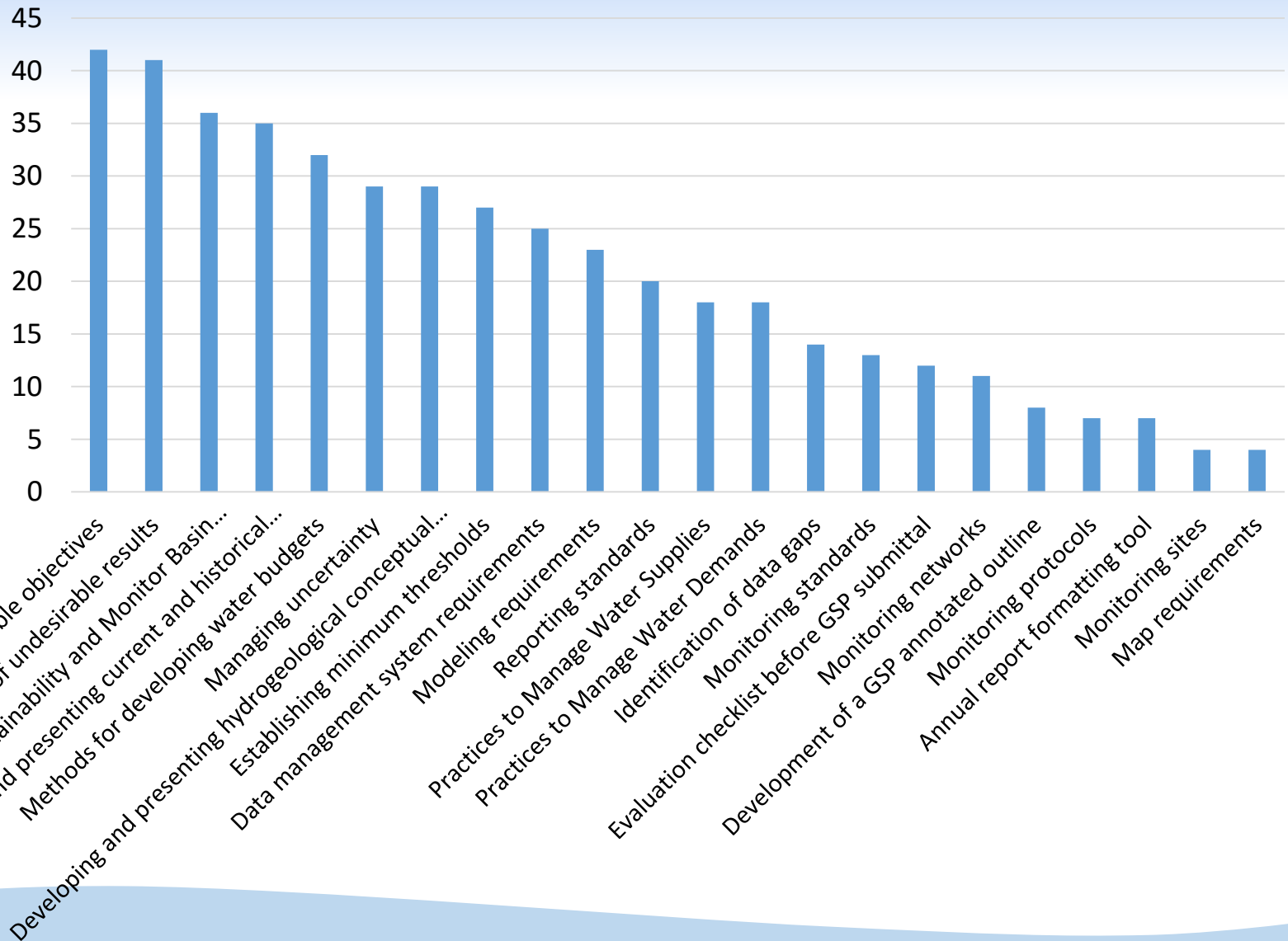
[Enter Survey](#)



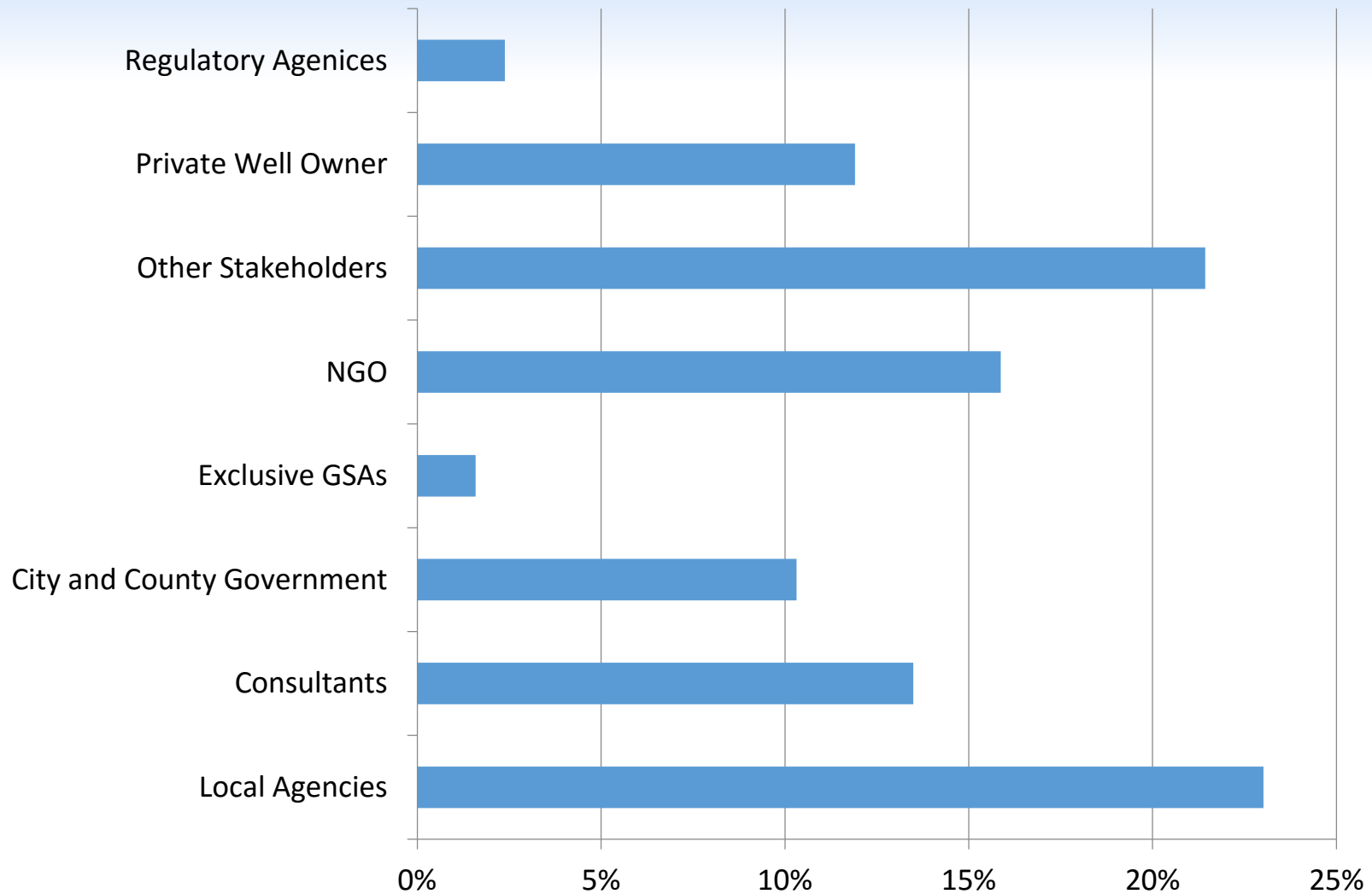
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# BMP Survey Response Counts

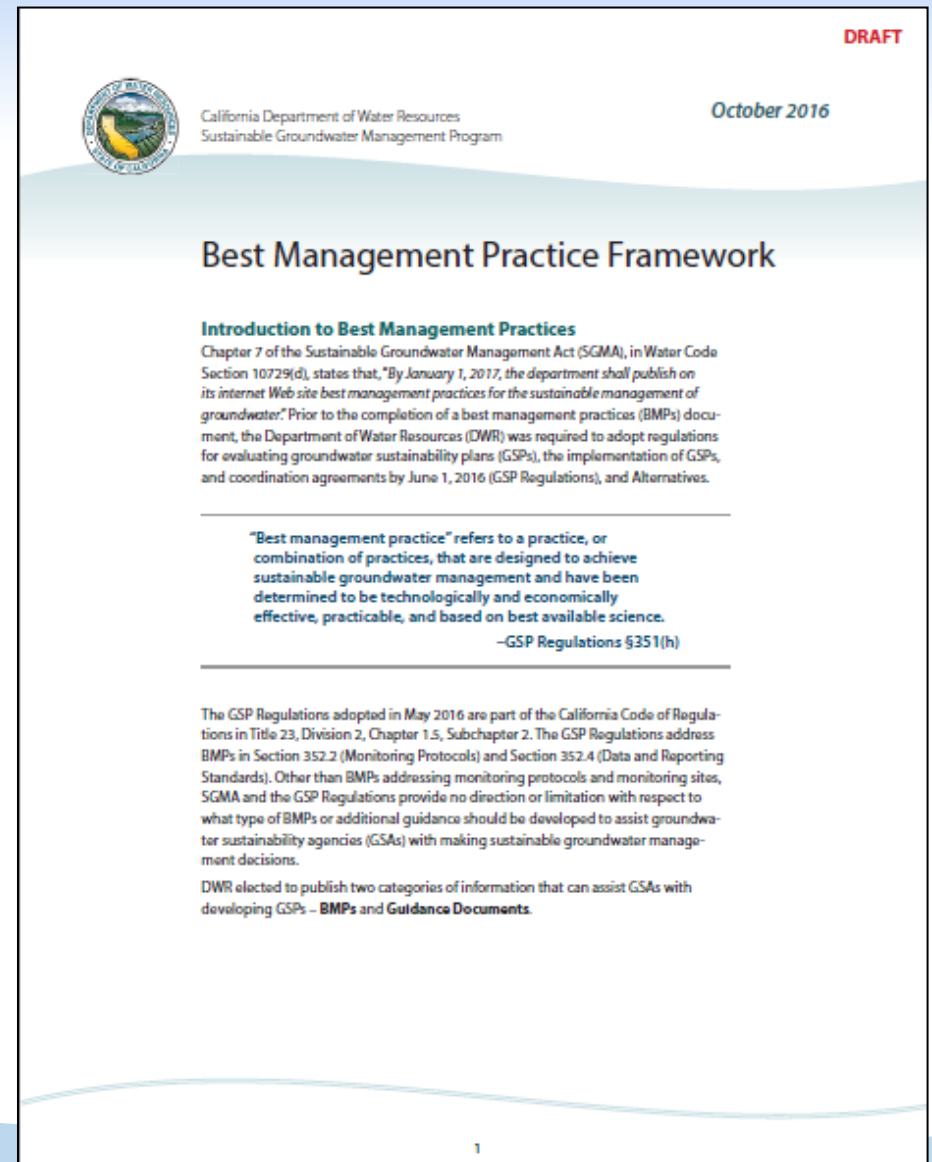


# BMP Survey – Respondent Types

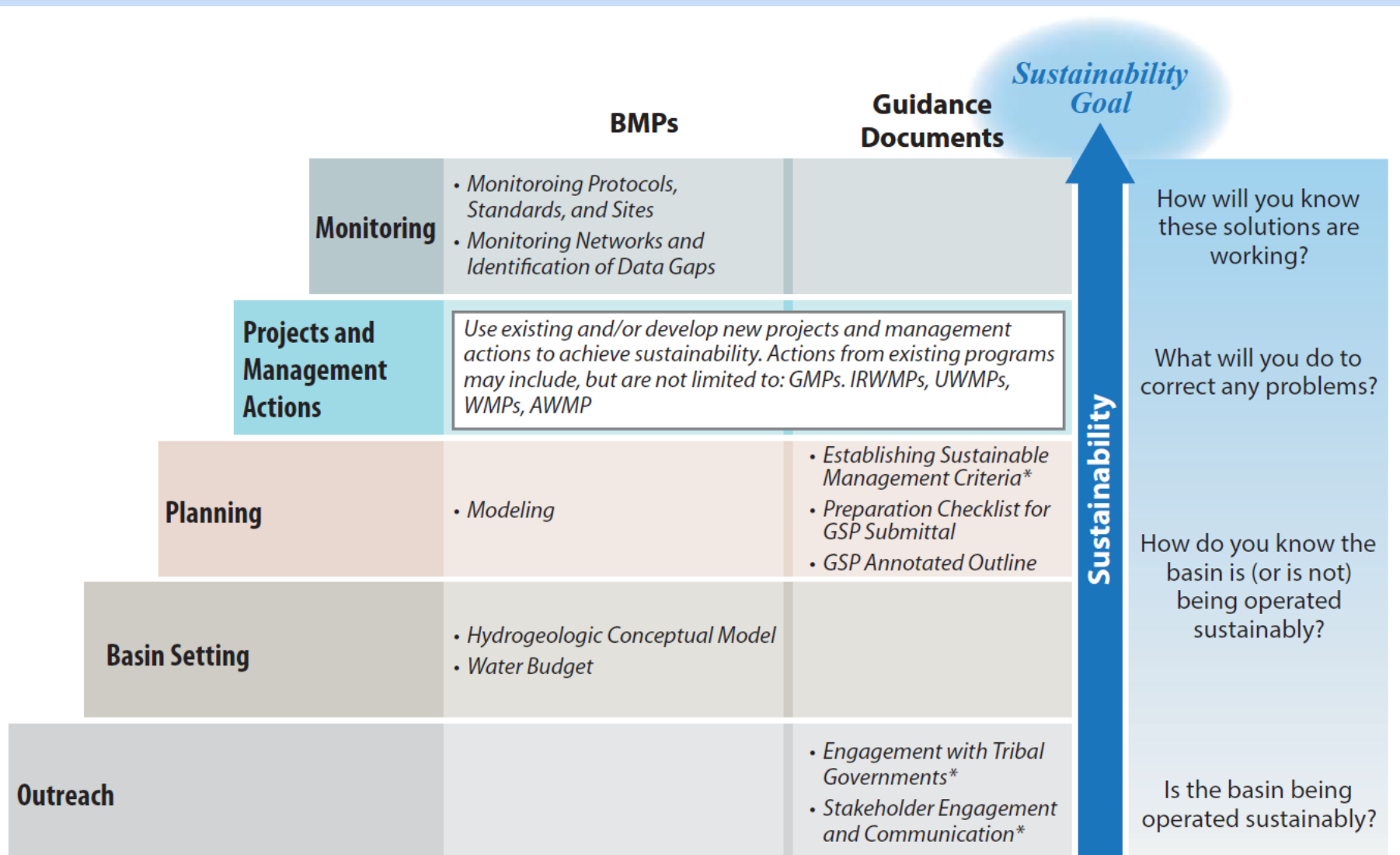


# Draft BMP Framework

- Definitions
  - BMPs – technical assistance
  - Guidance Documents - informational
- How to Utilize
  - Optional – do not create new requirements
  - Documents are not a substitute for GSP Regulations
- Organization/Workflow
- Identify Future Documents



# Document Organization and Use



\* In Development

## Engage Basin Stakeholders

- Engagement with Tribal Governments
- Stakeholder Engagement and Communication



Guidance

## Establish Basin Understanding and Setting

Hydrogeologic  
Conceptual Models



BMP

Water Budget



BMP

Modeling



BMP

Monitoring Protocols,  
Standards, and Sites

Monitoring Networks and  
Identification of Data Gaps



BMP



Guidance

## Establish Sustainable Management Criteria

### Sustainability Goal includes:

- Overarching objective or mission statement
- Description of the Sustainability Goal
- Description of measures that will be implemented to achieve the Sustainability Goal

Establish Management  
Areas to facilitate  
implementation of GSP  
(optional)

Establish criteria to define  
conditions and characterize  
Undesirable Results, Minimum  
Thresholds, Measureable  
Objectives, and Interim  
Milestones for each  
Sustainability Indicator

Establish numeric values to  
define Minimum Thresholds  
and Measurable Objectives  
at Monitoring Sites for each  
Sustainability Indicator

### Prepare and adopt Groundwater Sustainability Plan

- Preparation Checklist for GSP Submittal
- GSP Annotated Outline



Guidance



GSP Implementation

# Tentative Draft Release Schedule (Dates and Documents)

## Best Management Practices (BMPs)

- Oct 28 {
- BMP 1: Monitoring Protocols, Standards, and Sites
  - BMP 2: Monitoring Networks and Identification of Data Gaps
  - BMP 3: Hydrogeologic Conceptual Model
  - BMP 4: Water Budget
  - BMP 5: Modeling

## Guidance Documents

- Oct 28 {
- Preparation Checklist for GSP Submittal
  - GSP Annotated Outline
- Nov/Dec 2016 ←
- Engagement with Tribal Governments
- Late 2016 / Early 2017 {
- Establishing Sustainable Management Criteria
  - Stakeholder Engagement and Communication

# BMP Format and Structure

This BMP includes the following sections:

1. Objective. A brief description of how and where monitoring protocols are required under SGMA and the overall objective of this BMP.
2. Use and Limitations. A brief description of the use and limitations of this BMP.
3. Monitoring Protocol Fundamentals. A description of the general approach and background of groundwater monitoring protocol.
4. Relationship of Monitoring Protocol to other BMPs. A description of how this BMP is connected with other BMPs.
5. Technical Assistance. Technical content of BMP providing guidance for regulatory sections.
6. Key Definitions. Descriptions of those definitions identified in the GSP Regulations, SGMA, or Basin Boundary Regulations.
7. Related Materials. References and other materials that provide supporting information related to the development of Groundwater Monitoring Protocol.



# BMP # 1 – Monitoring Protocols, Standards, and Sites

- Protocols for:
  - Establishing Monitoring Sites
  - Measuring GW Levels
  - Sampling GW Quality
  - Monitoring Seawater Intrusion
  - Measuring Streamflow
  - Measuring Subsidence



Lowering  
GW Levels



Reduction  
of Storage



Seawater  
Intrusion



Degraded  
Quality



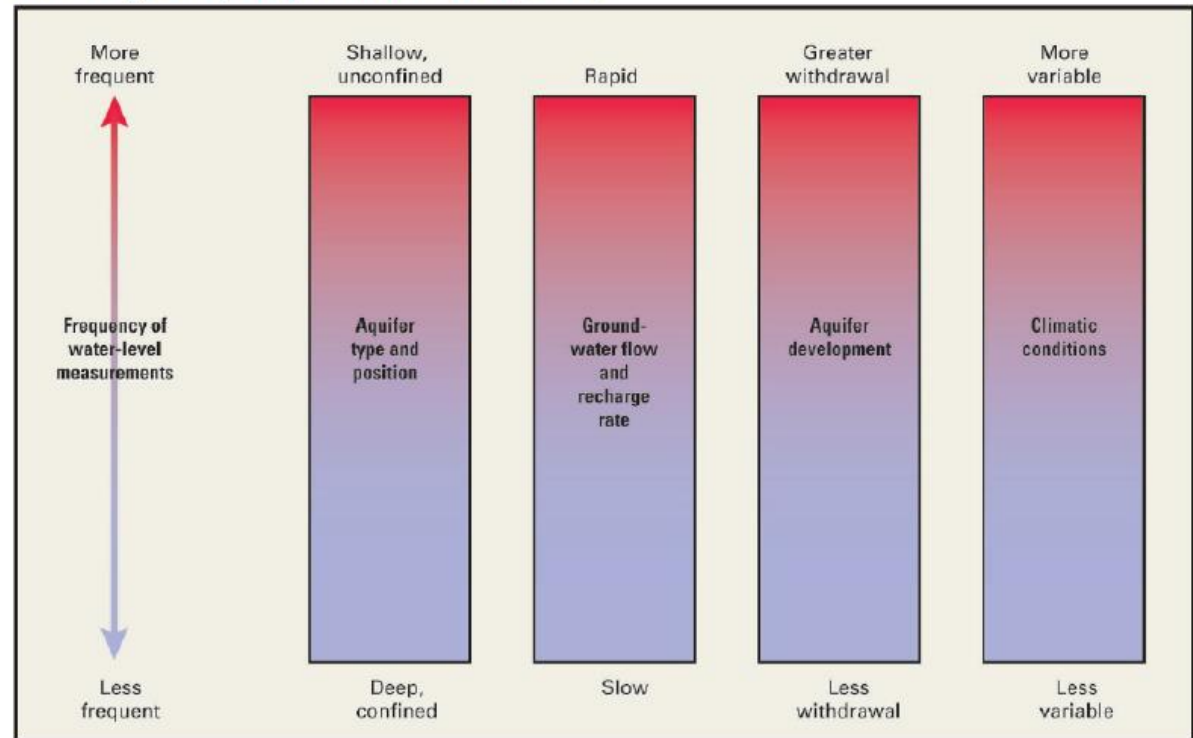
Land  
Subsidence



Surface Water  
Depletion

# BMP # 2 – Monitoring Networks and Identification of Data Gaps

Figure 2. Factors Determining Frequency of Monitoring Groundwater Levels (Taylor and Alley, 2001, adapted from ACWI, 2013)



- General Monitoring Networks
  - Improvement of Monitoring Network

- Specific Monitoring Networks



Lowering GW Levels



Reduction of Storage



Seawater Intrusion



Degraded Quality



Land Subsidence



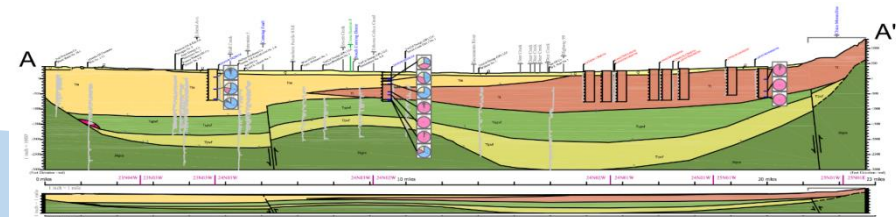
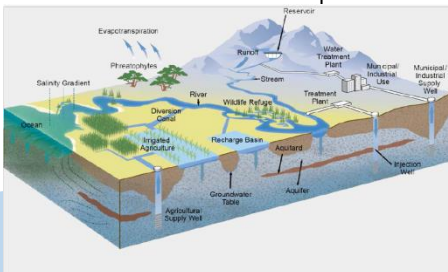
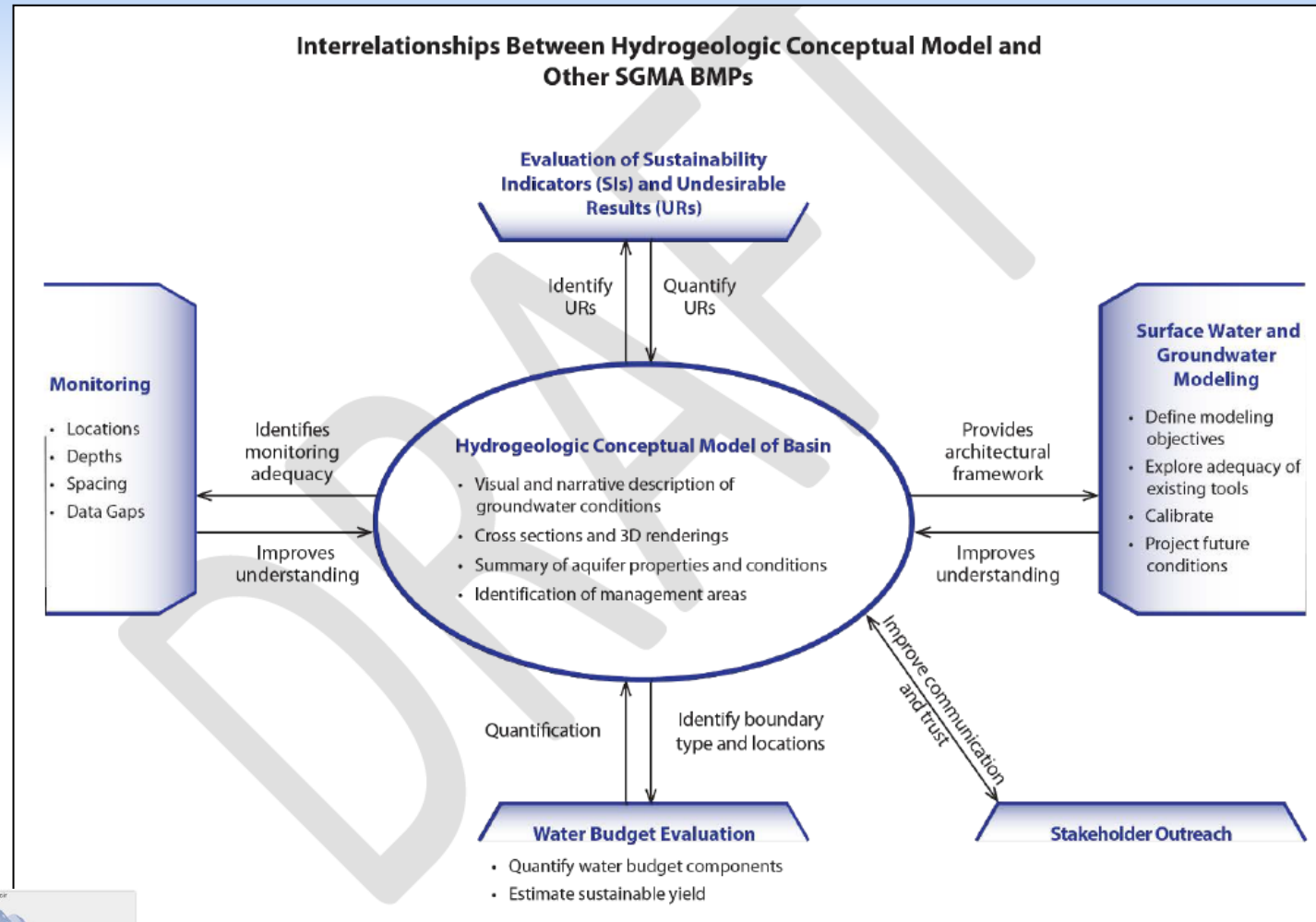
Surface Water Depletion

# BMP # 3 – Hydrogeologic Conceptual Model

- Characterizing Physical Components

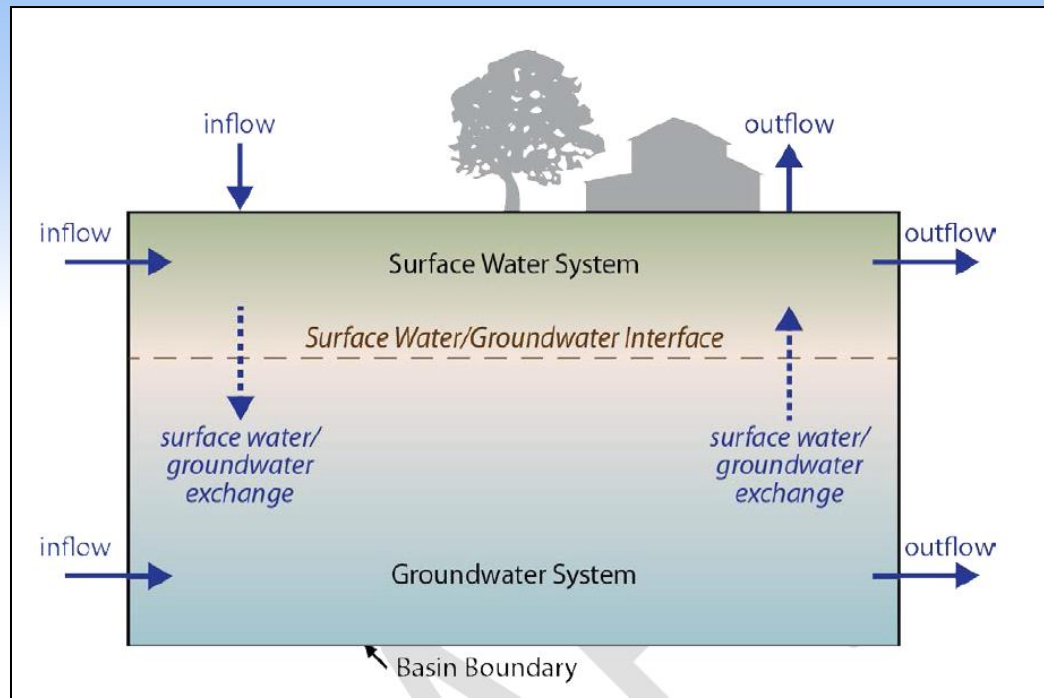
- Geologic and structural boundaries
- Lateral boundaries
- Bottom of the basin
- Principal Aquifers and Aquitards
- Graphical Representation

- Mapping Requirements



# BMP # 4 – Water Budget (WB)

- General WB Requirements
  - Certification
  - WB Data, Information, and Modeling Requirements
  - Defining Basin Area and Water Budget Systems
  - Accounting and Quantification of WB Components
- Tabular and Graphical Representation of WB Components
- Defining WB Time Frames
  - Current, Historical, Projected



Water Year: Water Year Type:			
INFLOWS		OUTFLOWS	
Inflow Source	Volume (af/yr)	Outflow Sink	Volume (af/yr)
Surface Water Inflow <sup>1</sup>		Surface Water Outflow <sup>1</sup>	
Precipitation		Evapotranspiration <sup>4</sup>	
Subsurface Groundwater Inflow		Subsurface Groundwater Outflow	
Total Basin Inflow		Total Basin Outflow	
Subsurface Groundwater Inflow		Subsurface Groundwater Outflow	
Infiltration of Precipitation		Groundwater Extraction <sup>1</sup>	
Infiltration from Surface Water Systems <sup>12</sup>		Discharge to surface water systems <sup>12</sup>	
Infiltration of Applied Water <sup>3</sup>			
Total Groundwater Inflow		Total Groundwater Outflow	
		Change in Surface Storage Volume	
		Change in Groundwater Volume	
<sup>1</sup> by water source type <sup>2</sup> lakes, streams, canals, springs, conveyance systems <sup>3</sup> includes applied surface water, groundwater, recycled water, and reused water <sup>4</sup> by water use sector			



# BMP # 5 – Modeling

## Fundamentals

- Types of Models, Software, Uses
- Models Used for SGMA

## Technical Assistance

- Guiding Principles For Models
- General Modeling Requirements

## Modeling Considerations

- Addressing Sustainability Indicators



Lowering  
GW Levels



Reduction  
of Storage



Seawater  
Intrusion



Degraded  
Quality



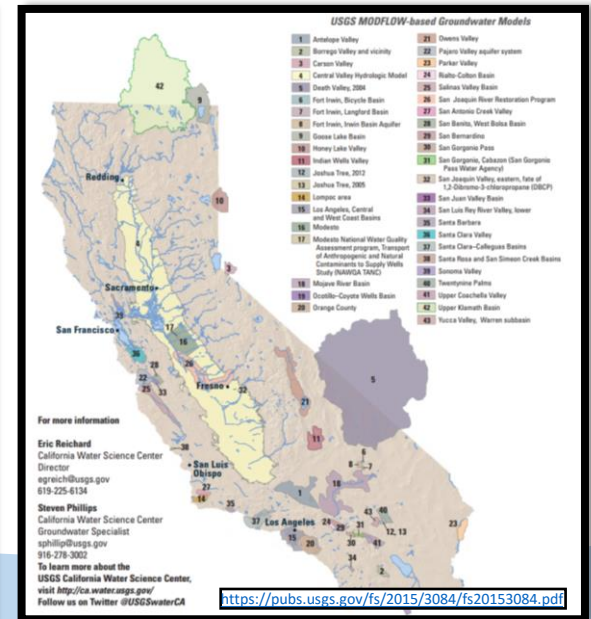
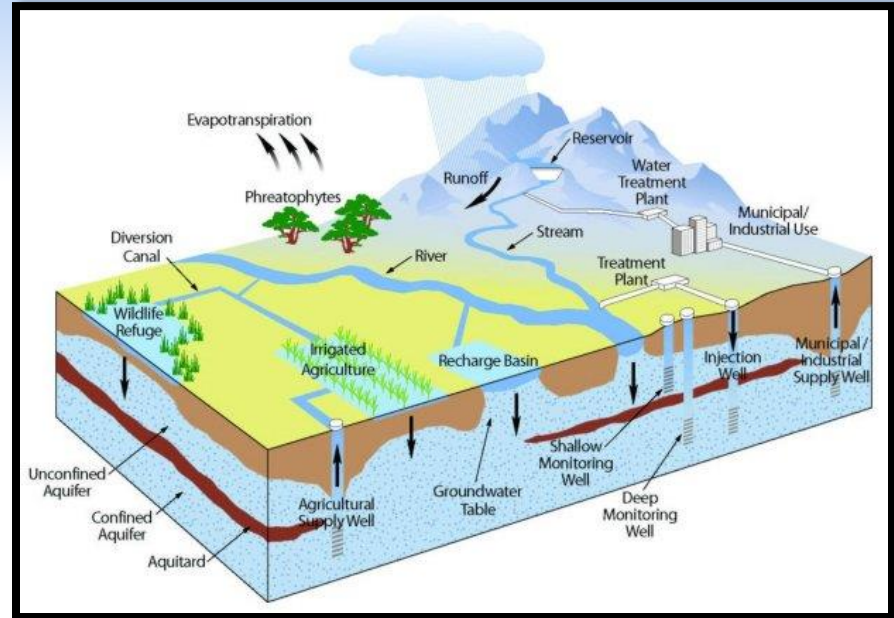
Land  
Subsidence



Surface Water  
Depletion

- Developing Water Budgets
- Forecasting Future Conditions, Projects, Actions
- Assessing Impacts on Adjacent Basins

- Groundwater Modeling Process
- Related References and Guidance Material



# Guidance Documents – Outline and Checklist

October 28, 2016

NDAC

Table 1. Preparation Checklist for GSP Submittal

GSP Regulation Section	Water Code Section	Requirement	
<b>Article 3. Technical and Reporting Standards</b>			
352.2		Monitoring Protocols	- Monitoring Protocols adopted by the - Monitoring protocols that are designe surface subsidence for basins for which of surface water that directly affect gro basin
<b>Article 5. Plan Contents, Subarticle 1. Administrative Information</b>			
354.4		General Information	- Executive Summary - List of References and Technical Studie
354.6		Agency Information	- GSA Mailing Address - Organization and Management Structu - Contact Information of Plan Manager - Legal Authority of GSA - Estimate of Implementation Costs
354.8.a	10727.2.(a).4	Map(s)	- Area covered by GSP - Adjudicated areas, other agencies with - Jurisdictional boundaries of federal or - Existing Land Use Designations - Density of wells per square mile
354.8.b		Description of the Plan Area	- Summary of jurisdictional areas and ot
354.8.c, d, e	10727.2(g)	Water resource monitoring and management programs	- Description of water resources monito - Description of how the monitoring net - Description of how those plans may lir - Description of conjunctive use prograr
354.8.f	10727.2(g)	Land Use Elements or Topic Categories of Applicable General Plans	- Summary of general plans and other la - Description of how implementation of and how the GSP addresses those effec - Description of how implementation of plans - Summary of the process for permitting - Information regarding the implementa Agency to achieve sustainable groundw

Draft Preparation Checklist for GSP Submittal Guidance Document

## Potential Groundwater Sustainability Plan Outline

### Executive Summary (Reg. § 354.4)

#### 1.0 Introduction

##### 1.1 Purpose of the Groundwater Sustainability Plan (GSP)

##### 1.2 Sustainability Goal

##### 1.3 Agency Information (Reg. § 354.6)

###### 1.3.1 Organization and Management Structure of the Groundwater Sustainability Agency (GSA)

###### 1.3.2 Legal Authority of the GSA

#### 1.4 GSP Organization

- Description of how the GSP is organized
- Preparation Checklist for GSP Submittal

## 2.0 Plan Area and Basin Setting

### 2.1 Description of the Plan Area (Reg. § 354.8)

#### 2.1.1 Summary of Jurisdictional Areas and Other Features (Reg. § 354.8 b)

- Map(s) (Reg. § 354.8 a):
  - Area covered by GSP
  - Adjudicated areas, other agencies within the basin, and areas covered by an Alternative
  - Jurisdictional boundaries of federal or State land
  - Existing land use designations
  - Density of wells per square mile

#### 2.1.2 Water Resources Monitoring and Management Programs (Reg. § 354.8 c, d, e)

- Description of water resources monitoring and management programs

# Public Meetings and Next Steps

Events	Schedule*
Release of Draft BMPs for public review and comment	October 28, 2016
Public meetings to discuss Draft BMP: 2:00 PM, Willows City Hall, City Council Chambers, 201 North Lassen Street, Willows, CA 95988	November 14, 2016
Presentation of Draft BMPs to California Water Commission. This includes a public webcast via the <a href="#">CWC website</a> .	November 15, 2016
Public meetings to discuss Draft BMP: 4:00 PM, Clovis Veterans Memorial Building, Veterans Room, 808 4th Street, Clovis, CA 93612	November 16, 2016
Public meetings to discuss Draft BMP: 1:00 PM, Delhi Community Center, Ballroom, 505 East Central Avenue, Santa Ana, CA 92707	November 17, 2016
Final BMPs Released	December 2016

\*All dates are subject to change.

- **After January 1, 2017** – Development of Phase II BMPs



# DWR's Future SGMA Engagement

~ July 1, 2017

~ 2020/2022

~ + up to 2 years

## Advisory Role

## Regulatory Role

Phase 1  
GSA Formation and Coordination

Phase 2  
GSP Preparation and Submission

Phase 3  
GSP Review and Evaluation

Phase 4  
Implementation and Reporting

Planning Assistance

GSP Compliance

Technical Assistance

Financial Assistance